



UNITED STATES PATENT AND TRADEMARK OFFICE

nlw

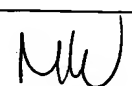
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/032,941	10/31/2001	Harry Hedler	13292-007001 / 2001P15322	7128
26161	7590	01/30/2004	EXAMINER	
FISH & RICHARDSON PC 225 FRANKLIN ST BOSTON, MA 02110				
			ART UNIT	PAPER NUMBER

2815

DATE MAILED: 01/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/032,941	Applicant(s) HEDLER ET AL.	
	Examiner S. V. Clark	Art Unit 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☒ Claim(s) 24 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2815

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -
(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1, 2, 3, 5, 8, 9, 12, 13, 16, 17, 18, 19, 20, 22 are rejected under 35 U.S.C. 102(a) as being anticipated by Grigg.

Grigg shows in figures 2-6 a semiconductor substrate 10 and a compliant interconnect element 50 formed in a ring disposed on the first surface and having a raised portions shown in figure 5 defining a chamber in the middle portion of said ring whereby said ring is taught to protrude from the surface of the semiconductor substrate (col. 5, lines 59-60). Grigg shows compliant interconnect 50 having a length, width and height and formed on a substrate. It therefore extends across by and length or width and away by a height.

Said compliant interconnect is taught to be formed of polymer.

A first conducting pad 12 is formed on the substrate and a contact layer 22 is shown disposed on said on the compliant interconnect and in contact with the first conducting pad.

A plurality of pads are shown in figure 6 and pad redistribution structures are shown in figures 7 and 9.

Art Unit: 2815

Substrate 30 is taught to be a higher level substrate which are also known as printed circuit substrates whereby a second pad 32 is disposed thereon and in electrical communication with the first conducting pad.

The steps of providing are deemed to be inherently taught by Grigg and use of a transfer substrate is taught in col. 7, lines 5-8.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 6, 7, 10, 11, 14, 15, 21, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grigg.

The features recited in these claims are considered features that are typically utilized in flip chip package assemblies and would therefore be obvious to one having ordinary skill in this art.

The height measurement recited in claims 6 and 7 would have been obviously considered by a workman having ordinary skill in this art in the design and optimization of the device.

Polymer material taught by Grigg would obviously include conventional materials such as silicone.

Art Unit: 2815

With regard to claim 10, the background of the device discussed in col. 1, lines 33-35 and col. 5, lines 50-55 obviously include micro electro mechanical systems which can be semiconductor die, chip scale packages, and ball grid arrays as listed.

Encapsulations recited in claims 11 and 23 are typically utilized in chip packages and it would therefore be obvious to one having ordinary skill in this art that encapsulations are utilized in the package of Grigg to protect the device and to enhance thermal conductivity characteristics.

With regard to claims 14, and 15, the "contact pads" of Grigg are characterized broadly and thereby suggests pads that are conventionally used in this art and typically in the devices recited in col.5, lines 50-55 and therefore may include multilayer metal structures as are typical in this art and whereby said metal may be obviously formed of the conventional thickness recited and be formed at least one of the conventional materials recited in claim 14 which at least one of said materials is utilized for its benefits relative to strength, thermal characteristics or electrical resistance.

Said transfer substrate is taught to utilize an adhesive which may obviously be formed of glass as such is well known in this art and would have been obvious to having ordinary skill in this art.

Claims 1-23 are recited.

Art Unit: 2815

New claims 24-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant's arguments filed November 7, 2003 have been considered but are not deemed to be persuasive. Noted again, the claims continue to fail to provide structural features with specific characteristics that would distinguish the recited structural features from device structure electrical and mechanical that are well known in this art. Applicant presents arguments relative to the feature presented in the amended claims relative to a portion extending "across and away" from the surface of the substrate. Extending "across and away" provides a broad range of structural arrangement and the claims fail to provide any specific structure that would specifically define what the across arrangement would entail nor what the away arrangement would entail. "Across" a substrate could have various structural arrangements such as begin affixed on top of or on, to having some small to large horizontal or vertical length or width thereon. The same is true for "away" from the substrate which could be up from, out or even down from. The claims fail to provide any specific structural that would define "across and away". Grigg shows compliant interconnect 50 having a length, width and height and formed on a substrate. It therefore extends across by and length or width and away by a height.

Art Unit: 2815

The same lack of clearly defined structure persists relative to the term “chamber” in the claims. Applicant attempts to discredit the chamber of Grigg by comparing it to an aperture and thereby providing dictionary definitions to distinguish a “chamber” from an “aperture”. Contrary to applicant’s arguments, Marriam Webster On Line dictionary defines chamber as a “cavity” and a cavity is defined a “hollowed out space” which appears synonymous with an “aperture” which is defined as “an opening”.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

The claims that are allowed provide more specific structural detail to the claims to more specifically define a working environment of said compliant interconnect.

Art Unit: 2815

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner S.V. Clark whose telephone number is (703) 308-4924.



SHEILA V. CLARK
PRIMARY EXAMINER